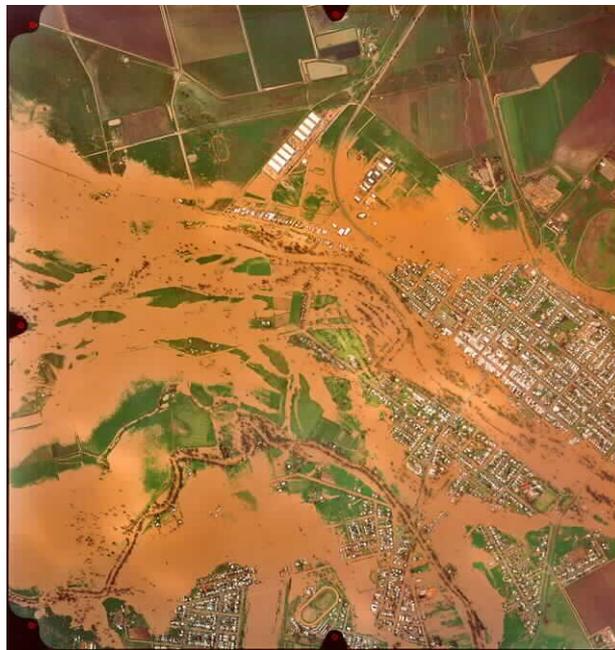




# CAPABILITY STATEMENT



Max Winders & Associates Pty Ltd tas MWA Environmental  
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## Introduction

MWA provides specialist engineering and environmental services to developers, government and professional clients, as well as offering complete packages in environmental assessment, management and monitoring.

The specialist fields covered by our multi-disciplinary staff include acoustics, air quality, hydrology and hydraulics, water quality and ecology.

Our services are relevant to residential, resort, commercial, industrial and infrastructure development in urban, rural and natural environments.

These services are provided by our staff of engineers and scientists from our well-equipped Brisbane office.



## OUR PEOPLE

### CONSULTANTS

- ✚ **Max Winders** - Principal: environmental planning & design
- ✚ **Paul King** - Senior Engineer: acoustics, air quality, environmental management
- ✚ **Ben Hyde** - Environmental Engineer: acoustics, air quality
- ✚ **James Marshall** - Senior Hydraulic Consultant: hydraulics, stormwater
- ✚ **Grant Edwards** - GIS Manager: data acquisition & management
- ✚ **Alex Schloss** - Environmental Consultant: air quality, acoustics
- ✚ **Elton Singh** - Acoustic Consultant: acoustics
- ✚ **Emily Scott** - Environmental Scientist: acoustics, air quality



## ACOUSTICS

MWA has wide experience in assessing the potential impact on residential and other noise-sensitive areas. We deal with noise from roads, railways, aircraft, industry, sporting and entertainment events. Our team is able to help you to manage those noise impacts in the most cost effective way by identifying the most appropriate acoustic solutions including buffer distances, barriers and building design components.

### TRANSPORTATION NOISE

- Road traffic noise studies using SoundPlan computer traffic noise modelling for residential estates, multi unit dwellings and commercial developments.
- Railway noise assessments for residential estates, multi unit dwellings and commercial developments.
- Aircraft noise assessments for residential estates, multi unit dwellings and commercial developments.

### SPORTS & ENTERTAINMENT NOISE

- Noise impact assessments for proposed sporting venues (outdoor and indoor), reverse amenity constraints imposed by locating noise sensitive uses in proximity to sporting venues.
- Entertainment and premises noise assessments for licensed and unlicensed venues.

### INDUSTRIAL NOISE

- Noise impact assessments for new industrial developments, consideration of reverse amenity constraints imposed upon industrial development from proposed noise sensitive uses.
- Detailed computer noise modelling of manufacturing/process facilities to determine noise mitigation measures.
- Field testing and assessment using in-house measurement equipment.

### BUILDING ACOUSTICS

- Assessment of internal building acoustics for residential, educational, commercial and industrial uses.
- Building Code of Australia assessments for residential dwellings.

### PLANNING STUDIES

- Providing specialist consulting services to masterplanning studies for new residential, commercial and industrial development.



## AIR QUALITY

MWA is well-equipped in the assessment of air pollutant emissions through our extensive experience in measuring and managing air quality. Using computer modelling of atmospheric dispersion, we are able to predict the potential degree of exposure in pollution-sensitive areas to levels of odour, dust and other air pollutants. This enables MWA to suggest buffer distances and emission control measures avoiding costly potential land-use conflicts.

### INDUSTRIAL EMISSION

- Air quality studies for industrial processes including power stations and manufacturing facilities

### TRAFFIC EMISSION

- Road traffic pollutant studies with respect to impact upon sensitive uses including childcare and educational facilities, field monitoring and computer modelling

### DUST, ODOUR

- Dust impact assessments for uses including concrete batching plants, quarries, timber manufacturing and similar industry.
- Odour impact assessment for sewage treatment facilities, composting, abattoirs, poultry farms, cattle feedlots and piggeries.

### PLANNING STUDIES

- Providing specialist consulting services to masterplanning studies for new residential, commercial and industrial development.
- Air pollutant constraints assessment.
- Air pollutant impact modelling and reporting.



## WATER

### FLOOD STUDIES

Historically, MWA has played a significant role in obtaining approvals for those major developments, which have been constructed in the floodplains of SE Queensland, particularly those of the Nerang, Coomera, Logan and Maroochy Rivers. In addition, MWA has carried out flooding studies in many sub-catchments of these and other river systems in Queensland and NSW.

Because of our long standing history and experience with the region and its unique issues, we can provide specialist advice on flooding issues in most of the river systems of Queensland and NSW. This places us in a strong position to undertake detailed flooding and drainage studies for development applications in flood-prone areas.

### STORMWATER MANAGEMENT

MWA has extensive experience in the design of stormwater management systems to meet the codes and policies of government agencies and to provide an optimum outcome for the developer/client.

### WATER QUALITY

Combining our technical expertise, knowledge and experience, MWA uses in house water quality modelling software able to determine environmental impact on estuarine and fresh waters. Looking at point sources such as discharges from aquaculture and wastewater treatment plants, we strive to evaluate and create suitable release strategies to satisfy the needs of all parties involved.

### GROUNDWATER ASSESSMENT

Using state of the art modelling systems, MWA has developed capacities for groundwater impact assessment and evaluation. Our technical capacity and our proven experience combine to produce the most beneficial outcomes for groundwater resources for urban, rural, mining and industrial developments.

### WATER RESOURCE MANAGEMENT

Utilising MWA's depth of experience and in house specialist hydrology expertise, we are able to provide strategies for managing surface water and groundwater resources for both private and governmental developments.



## FLORA & FAUNA

MWA Environmental's accredited staff are experienced in undertaking the flora and fauna studies necessary to support development applications in Queensland and NSW. From site surveys, mapping and ecological monitoring to ensuring compliance with the codes of practice adopted by local and state governments, MWA provides a wealth of knowledge to guide developers and government agencies alike to successful outcomes.

### VEGETATION SURVEYS

We have in-house GPS tracking equipment to assist in field surveys of sites to identify and locate vegetation communities to assist in development planning and assessment.

### ECOLOGICAL ASSESSMENT

Combining the resources of our staff members, we can provide an integrated approach to ecological assessment utilising our environmental and engineering divisions to both assess ecological constraints and to design suitable development outcomes.



## ENVIRONMENTAL PLANNING

MWA is often heavily involved in the conceptual design stage of development to provide information about what type of environmental constraints may occur. This arms our clients with a greater knowledge of the project being undertaken. In turn, this knowledge enables our clients to access cost efficient options and evaluate long term directions to use these constraints to their advantage or minimise their impact. MWA's input then provides a basis for the subsequent detailed analysis and reporting necessary to take the development through to the approvals process. MWA also provides specialist services at the broad-scale planning stage to planners of industrial estates, infrastructure and potential development areas in flood plains.

## ENVIRONMENTAL ASSESSMENT

Being a multi-disciplinary consultancy of environmental engineers and scientists, MWA has a recognised in-house capability to undertake environmental impact assessments for a wide range of urban, infrastructural, resort, industrial, aquaculture and rural development proposals.

## ENVIRONMENTAL MANAGEMENT

MWA is increasingly involved in the preparation of detailed environmental management plans for new and expanding developments. MWA has the in-house capability to provide a full service in this regard for developments in industrial, commercial, urban, rural and natural areas.

## COASTAL ZONE MANAGEMENT

MWA has a strong track record in providing specialist consultant services for resort, marina and comprehensive development in the beachfront, estuarine and hinterland areas of the coastal zone. We are a multi disciplinary practice that services private and government clients with a particular emphasis on development within the coastal zone. Development in the beachfront, hind dune and estuarine sections of the Coastal Zone requires an understanding of the natural processes and the impact development may impose. The principal and professional staff have specific expertise related to engineering and coastal ecosystems combined with coastal engineering capabilities to address these issues.

## WASTE DISPOSAL

MWA is experienced in the assessment of proposals to dispose of effluent from industrial, waste treatment and rural sources by irrigation. Using comprehensive modelling combined with water and soil quality monitoring MWA is able to assess waste water treatments, which would determine the standard, which would allow the treated effluent to be discharged into waterways. MWA is also experienced in the assessment of proposals for the treatment and disposal and re-cycling of solid waste on to land. An example of this is large scale composting and manure spreading.

#### HAZARD AND RISK ASSESSMENTS

MWA is often called upon to prepare hazard and risk constraints assessments for developments with respect to both environmental and industrial risk and hazards.

#### LIGHTING

MWA staff have significant experience in assessing the impacts of development lighting upon surrounding environment adjacent land users. Field studies using light measuring equipment are regularly undertaken for both development and industrial clients.



## ACHIEVEMENTS

### RESORT DEVELOPMENT

Many of MWA's more prestigious projects have been tourist, marina and golf course resort developments, where the resort and its recreational and tourist facilities have been combined with a significant residential component. Most involved large tracts of undeveloped land with significant environmental constraints.

#### *Major Projects*

- *Lakelands Golf Resort*
- *Twin Waters Resort*
- *Oyster Cove*
- *Monterey Keys*
- *Great Keppel Island*

### RETAIL & COMMERCIAL DEVELOPMENT

MWA provides services to developers during the conceptual, design and approvals stages of a range of types of retail and commercial developments in locations where environmental and ecological issues may be of concern.

#### *Major Projects*

- *Queen Plaza*
- *Westfield, Carindale*
- *Capalaba Park Shopping Centre*
- *Nerang Plaza Shopping Centre*
- *Bunnings – Bundaberg, Capalaba, Victoria Point, Gladstone*
- *Woolworths: Mackay, Victoria Point, Yeppoon, Brisbane*
- *McDonalds Family Restaurants, Queensland and New South Wales*
- *Neighbourhood retail centres: Belmont, Oxley, Seventeen Mile Rocks*
- *Office & Commercial Developments: Queensland and New South Wales*
- *Service Stations: Queensland*



## ENTERTAINMENT & SPORTING VENUES

MWA provides a range of services for the developers and operators of entertainment and sporting venues but noise generated by the activities, their participants and spectators is generally the principal area of concern, except where the scale of the venue involves a major change of land use.

### Licensed Venues

- preparation of acoustic reports to accompany liquor licensing applications for hotels, night clubs, licensed clubs and restaurants in Brisbane, Gold Coast and elsewhere;
- acoustic design of existing and proposed entertainment areas in licensed venues to meet acceptable exterior and interior noise level criteria
- monitoring of noise from existing venues to gauge compliance with acceptable criteria and to design appropriate noise controls if necessary.

### Major Projects

- *Gold Coast Convention & Entertainment Centre*
- *Australia Zoo, Beerwah*
- *Sports Flying Field, Pimpama*

### Sporting Facilities

- *Ballymore Rugby Ground*
- *Sunnybank Rugby Ground*
- *tennis complex, Balmoral*
- *numerous private tennis courts*
- *squash courts*
- *indoor cricket facilities*
- *golf courses: Lakelands, Paradise Springs, Twin Waters*
- *golf driving ranges: Mt Gravatt, Carseldine*
- *ten pin bowling alleys*
- *ultra-light airfields*

### Motor Racing

- *Darlington Park Motor Racing Circuit*
- *proposed Cockatoo Creek motor racing complex*
- *Kingston Park Raceway, Logan City*
- *Indoor Go-Karts, Brisbane*
- *motocross tracks, Fernvale, Toowoomba, Murphy's Creek*

## INDUSTRIAL

The environmental management skills of MWA are used by industry during the site selection, environmental planning, plant design and approvals stages of new and expanding projects and also to provide a technical response to compliance issues and complaints concerning existing industries.

### *Process Industries*

- *assessment of constraints to residential development of oil refinery, Brisbane;*
- *EIS and EMP for paper tissue de-inking and manufacturing plant, Carole Park;*
- *fibreglass boat manufacturing, Gold Coast*
- *brickworks, Bundaberg*
- *sodium cyanide plant, Gladstone*
- *poultry abattoirs – Ipswich, Mt Cotton*
- *pork abattoirs – Toowoomba, Gatton, Kingaroy*
- *beef abattoirs – Emerald, Ipswich, Coominya, Rockhampton*
- *rendering plant – Beaudesert*
- *gelatin plant - Beaudesert*

### *Service Industries*

- *assessment of constraints to development of service industries adjacent to residential developments*
- *panel beaters, spray painters, abrasive blasting, bakeries;*
- *concrete batching plants*
- *asphalt plants*

### *Industrial Estates*

- *Metroplex on Gateway*
- *Metroplex at Westgate*
- *Narangba*
- *Banyo*
- *Bundaberg*
- *Ipswich*
- *Gold Coast Marine Precinct*

## EXTRACTIVE INDUSTRY AND MINING

### *Major Projects*

#### *Extractive Industry*

- *hard rock quarries at Kingsthorpe, Withcott, Paradise Creek, Gordonvale, Cairns, Yandina, Keperra, Mt Cotton, Petrie, Caboolture;*
- *sand and gravel extraction at Jacobs Well, Ravensbourne, Warwick, Beachmere*
- *extraction of soil and landscaping materials, Noosa Shire, Ipswich*

#### *Mining*

- *dust, noise and lighting nuisance from coal mining, Central Queensland;*
- *noise and dust from coal railways, Central Queensland;*
- *noise studies for gold mines, Gympie & Yandina*

## RURAL INDUSTRIES

MWA provides a comprehensive range of services for projects in rural areas associated with intensive animal industries – principally feedlots, poultry farms and piggeries, together with abattoirs and feedmills.

### **Feed Lots**

- preparation of plans and reports for feedlot proposals ranging in size from 2,000 scu to 30,000 scu at Jondaryan, Acland, Proston, Wambo, Esk, Woodstock, Jackson
- preparation of EMPs and undertaking soil and effluent monitoring of feedlots at Wambo, Proston and Acland;
- assessment of surface and groundwater resources for feedlots at Wambo & Acland.

### **Poultry Farms**

- preparation of environmental assessments to support major meat chicken farm proposals at Coominya, Redlands;
- provision of advice to local authorities concerning air quality and noise aspects of major chicken farm proposals in Beaudesert, Esk, Murgon Shires.

### **Piggeries**

- provision of advice to local authorities concerning major piggery applications
- Odour impact assessments for existing and proposed piggeries including reverse amenity constraint assessment

### **Abattoirs**

- preparation of environmental assessments and EMPs to support abattoir applications at Coominya, Gatton, Rockhampton and Kingaroy.
- provision of advice to local authorities and others concerning odour and noise from abattoirs in Rockhampton, Emerald, Redlands, Cannon Hill & Toowoomba

### **Effluent & Waste Management**

- composting plants, Ipswich, Yatala, Beerwah, Swanbank



## INFRASTRUCTURE PROJECTS

MWA's principal involvement with infrastructure projects is with the acoustic assessments of highways, major roads and railways and the design of buildings, barriers and buffers necessary to accommodate these. Other services available include the selection of design parameters for bridges and major culverts and the assessment of the need or otherwise to provide flood mitigation or to increase flood immunity by design changes. MWA is also involved with the environmental assessment of airports, helicopter landing sites, ferry transport terminals, cruise ship terminals and port facilities. MWA is also experienced in the design of flood mitigation measures for developments in floodplains and in stream valleys.

### *Roads, Highways*

- *provision of advice to cane farmers concerning the upgrading of the Pacific Highway from Chinderah to Yelgun*
- *design of acoustic barriers along major roads & highways at Forest Lake, Springfield Lakes, Cardwell, Townsville, Mackay.*
- *flood studies associated with the impact of the Bruce Highway on the extent of flooding of Eudlo Creek, Maroochy Shire.*

### *Railways*

- *design of buildings, barriers and buffers between railway lines and residential developments in Brisbane, Townsville and Gold Coast.*
- *environmental assessment of noise from rail freight terminals, Tennyson, Townsville*

### *Airports, Heliports*

- *design of residential buildings in aircraft noise-affected zones associated with airports at Brisbane, Gold Coast, Maroochy, Cairns, Coolangatta, Townsville, Mackay*
- *acoustic assessments of helicopter landing site proposals at Brisbane, Beerwah, Cairns*

### *Ports*

- *environmental assessments of developments near port developments at Brisbane, Gladstone, Townsville*
- *Noise and lightings studies for Port of Townsville.*
- *environmental assessments of marinas, navigation and port facilities at Brisbane, Gold Coast.*



## CONTACT US

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ABN: 94 010 833 084

ACN: 010 833 084

## CURRICULUM VITAE

### MAX WINDERS

#### *MANAGING DIRECTOR*

#### QUALIFICATIONS

Bachelor of Engineering (Mechanical) (Honours), University of Queensland, 1961  
F.I.E.Aust., C.P. Eng., R.P.E.Q

#### TECHNICAL EXPERTISE

Environmental Impact Assessment  
Environmental Management  
Flooding and Tidal Hydraulics  
Coastal Ecosystems  
Environmental Acoustics  
Intensive Animal Husbandry and Aquaculture

#### PROFESSIONAL EXPERIENCE

##### **Prior to Founding Max Winders & Associates Pty Ltd tas MWA Environmental (1961 – 1987)**

Following graduation with honours in 1961 from the University of Queensland in Mechanical Engineering, he was employed as Maintenance Engineer and then Operations Engineer until 1965 at the coal-fired Howard Power Station, on the Burrum River. In these capacities he was particularly responsible for those aspects of power station operation which concerned water quality and the environment in general.

This was followed by post-graduate studies at the University of Queensland into the environmental aspects of thermal power stations, mainly into the steam turbine condensing systems and the environmental factors which affected turbine design and performance.

In 1969, as a director of both firms, he helped found Oceanics Australia Pty. Ltd. and Winders Barlow & Morrison Pty.Ltd... In that capacity until 1987, he had a major input into detailed studies of noise, air and water pollution, as well as being concerned with tidal and flood hydraulics and coastal engineering. He was also responsible for directing a number of multi-disciplinary environmental impact studies.

Major studies in which he made significant contributions include:

- Port Curtis Water Quality Study
- Gladstone Air Shed Study
- Brisbane Environmental Noise Study
- Coomera River Extractive Industry Flooding and Tidal Investigations
- Environmental Investigations Associated with Expansion of Pioneer's Keperra Quarry
- Currumbin Estuary Development Proposal
- Major Development Proposal for Bribie Island and Pumicestone Passage.
- Flooding and Tidal Studies of the Tweed, Richmond, Nerang, Coomera, Logan, Pine, Mooloolah, Maroochy Rivers, as well as of many creek systems.
- Environmental Impact Studies into coal-fired power stations at Toorbul Point, Gladstone, Swanbank & Colosseum Inlet, as well as coastal land development proposals along the whole eastern coastline of Queensland and Northern NSW.

### **As Managing Director of Max Winders & Associates Pty. Ltd. (1987 to Present)**

In this capacity, his goal has been to provide a comprehensive, engineering and science-based environmental consultancy service to the development industry and to government agencies concerned with the provision of public infrastructure. To this end, he has acquired and trained competent staff in the required disciplines of engineering, ecology, environmental science and information technology.

With the support of the company's professional staff, he has been able to direct in excess of 1,000 investigations, the range of which might be gauged from the following major projects:

#### **Environmental Impact Assessment**

With expertise across a wide spectrum of environmental issues and prior involvement in multi-disciplinary EIS preparation, as the principal of Max Winders & Associates he has either directed or had a major role in the preparation of environmental impact assessments for the following:

- Gold Coast Convention & Entertainment Centre
- Forest Glades residential development, Byron Shire
- Twin Waters resort development
- Queen Street Mall
- Bunning's Warehouse, Bundaberg
- Australia Zoo expansion, Sunshine Coast
- Gold Coast Cruise Ship Terminal proposal
- Proposed tourism, resort and residential development, Inskip Point
- Waterway residential development, Coomera River
- Aquaculture developments at Moresby River, Baffle Creek, Burnett River, Maryborough, Logan River
- Motor sports complex, Canungra Creek
- Sodium Cyanide Plant, Gladstone
- Titanium Alloy Manufacturing Plant, Gladstone
- Hard rock quarry, Withcott
- Hard rock quarry, Upper Ormeau
- Abattoir, Coominya
- Several cattle feedlots, Darling Downs and Brisbane Valley
- Road/rail freight depot, Moolabin
- Newmarket Shopping Centre
- De-inking Plant for paper tissue manufacturer, Carole Park
- Sheepskin Tannery, Narangba

## Environmental Management

Having an engineering background, he has a pro-active approach to environmental management which has enabled him to coordinate the preparation of environmental management plans to the satisfaction of the regulatory bodies for a wide range of environmentally relevant activities, including the following:

- Major building projects such as shopping centres, high rise residential developments, institutional buildings and others in the Brisbane CBD and Gold Coast.
- Transport terminals and heavy vehicle workshops in Brisbane and Nth Queensland
- Industrial plants including milk factories, tanneries, composting plants, secondary metals processors, concrete batching plants, hard rock quarries, abattoirs, sewage treatment plants and paper tissue plants.
- Construction and operational stage management plans for residential and resort developments, Brisbane, Gold Coast, Sunshine Coast and northern NSW.

## Flooding and Tidal Hydraulics

Recognising the value of computer models in the design of developments in floodplains and coastal areas, he was instrumental in maintaining his company's prominence in their use by the acquisition of appropriate software and professional staff for this purpose. Major studies in this regard include:

- Flooding studies for numerous developments in the floodplains of the Nerang, Coomera Rivers, Logan, Brisbane, Bremer, Mooloolah and Maroochy Rivers using MIKE-11 and RMA-2 flood hydraulics software.
- Flood studies of inland river floodplains at Narrabri and Goondiwindi.
- Detailed flooding studies of the effects of development and transport infrastructure of a number of smaller streams, including Eudlo, Cabbage Tree, Ithaca, Bullockhead, Canungra, Tallow, Baffle, Scrubby and Bulimba Creeks.
- Tidal studies associated with estuarine development on the Gold and Sunshine Coasts.
- Tidal studies associated with aquaculture development on the Logan, Maroochy, Burnett and Moresby Rivers, as well as Baffle Creek and in the Great Sandy Region.

## Water Quality

His principal area of involvement has been in the development of water quality models for the assessment of aquaculture proposals which rely to some extent on the ability of an estuarine ecosystem to accept nutrient loadings from aquaculture pond discharges e.g.

- Use of RMA-11 modelling to develop release management strategy from 70 ha prawn farm in the Great Sandy Region.
- Ecological assessment of Baffle Creek, later supported by water quality and ecological monitoring, together with RMA-11 analysis, for 63 ha prawn farm.
- RMA-11 modelling and detailed water quality assessment of a proposed aquaculture facility to discharge into the upper reaches of the Moresby River estuary.
- Modelling and water quality assessment for various prawn farms on the Logan River.

He has continued to design and monitor the performance of tidally-flushed lake developments on the Nerang, Coomera and Maroochy Rivers, e.g. Lake Capabella, Lake Rosser, Oyster Cove, Monterey Keys, Twin Waters.

He has supervised the use of stormwater quality models by MWA staff to design stormwater management systems for a large number of residential, resort and golf course developments in southern Queensland and northern NSW. He is experienced in the selection of effluent treatment systems and in the design and management of effluent irrigation systems for residential, industrial and intensive animal husbandry developments.

## CURRICULUM VITAE

**PAUL KING**

**SENIOR ENGINEER**

### QUALIFICATIONS

Bachelor of Engineering (Mechanical) Queensland University of Technology, 1988

### TECHNICAL EXPERTISE

Environmental and Architectural acoustics including

Traffic, rail and aircraft noise

Industrial Noise

Entertainment Noise

Design of Internal Spaces to meet defined acoustic requirements

Use of Applied computer modelling and scientific analysis to provide design solutions to environmental engineering related matters

Environmental Assessments

Environmental Audits and Management Plans including

Environmental Management Plans

Stormwater Quality Management Plans

Air Quality Assessments including

Air quality monitoring, use of computer modelling to predict airborne pollutant transport including odour and particulates.

Expert Witness in Planning and Environment Court, Magistrates Court, Liquor Appeals Tribunal, Land and Resources Tribunal, Land Court.

### PROFESSIONAL EXPERIENCE

**Senior Engineer, Max Winders & Associates Pty Ltd tas MWA Environmental  
(1988 to present)**

Senior Engineer responsible for environmental assessment, acoustics and air quality. Role includes co-ordination of projects through approvals processes, liaison with government departments and officers to progress development approvals and to resolve conflicts with respect to environmental matters. Specific duties include:

- Road traffic noise studies using computer modelling in conjunction with detailed field noise measurements to design acceptable acoustic controls for new roads and for new sensitive land uses. Assessments of noise from car parking and traffic movements associated with developments including retail, commercial and industrial development.
- Rail traffic noise studies using computer modelling in conjunction with detailed field noise measurement to design acceptable acoustic controls for new sensitive land uses in proximity to rail corridors including Marshalling Yards, freight depots and rail line corridors.
- Aircraft noise assessment including use of regulatory methods to assess land use suitability in aircraft noise affected areas, detailed field noise measurements, consideration of land uses in proximity to airports and design of appropriate acoustic controls in residences to satisfy regulatory design criteria.

- Industrial noise assessment for proposed and existing industry to obtain development approvals and to resolve noise complaints and excess noise emissions using engineering methods. Detailed noise measurement and analysis using computer models and precision monitoring equipment are used to determine noise emissions and to assess required noise control works. Industrial and commercial sources investigated include quarries, sand and gravel processing plants, underground mine ventilation plant, concrete plants, feed mills, air-conditioning and refrigeration plant and mining operations.
- Detailed acoustic design for residential, commercial, educational, medical and industrial uses of internal building use areas. Provision of acoustic outcomes for speech intelligibility in educational and commercial facilities by way of acoustic design of internal spaces. Residential projects include compliance design with Building Code Sound Isolation Provisions, acoustic design of external facade elements to account for external acoustic environment, mechanical plant noise assessment and acoustic control design.
- Combined studies on noise, light and air quality aspects for developments such as shopping centres, fast food restaurants and service stations.
- Air quality studies to determine the impact of atmospheric emissions from industrial plants, extractive industry and odour sources such as cattle feedlots, poultry farms and sewage treatment plants.
- Transportation generated pollutant load investigations to determine impact upon sensitive land uses including childcare centres.
- Entertainment noise investigations for proposed and existing venues utilising amplified entertainment including Licensed Clubs and Hotels and for proposed residential development in proximity to such development. Studies involve detailed noise measurement, computer noise modelling and assessment to determine appropriate design solutions.
- Environmental Impact Assessments for commercial and industrial developments are prepared for developments including retail shopping centres, chemical manufacturing plants, paper tissue manufacturing facility, meat processing, cattle feedlots, concrete batching plants, mines, quarries and related industry.
- Environmental management plans are prepared for the construction and operational phase of developments including areas of noise, air quality, stormwater quality and related fields.
- Flooding studies for minor and major watercourses have been conducted with his input including computer modelling, hydrological and hydraulic calculations.
- Involvement in community consultation and liaison to progress development projects for both private developers and local authorities. Presentations to community groups and interested parties regarding environmental aspects of development approvals.

## **RELEVANT PROJECTS**

### **Road Traffic Noise Studies**

- Delfin Property Group – Forest Lake, Springfield Lakes
- Australand – Glendora Estate McDowall; Carindale Hills, Carindale; Dandenong Rd, Mt Ommaney

### **Rail Traffic Noise Studies**

- Melton Road, Northgate;

### **Aircraft Noise Studies**

- SEQ Properties – Mudjimba Subdivision;
- Benin Pty Ltd Oxley Ridge Golf Course Estate, Blunder Road, Oxley;

### **Residential Acoustic Design**

- Riva Apartments, Indooroopilly
- Viva Apartments, Fortitude Valley
- Kelvin Grove Urban Village
- Parklands, Roma Street
- London Woolstore, Teneriffe
- Leftbank Apartments, West End
- Drift Apartments, Casuarina Beach
- Numerous townhouse and unit developments adjacent major transport corridors including railway lines, major roads and aircraft flight paths.

### **Commercial/Educational Acoustic Design**

- Anglican Church Grammar School – Science Block, Sports Hall.
- Stuartholme – Joigny Centre – Large auditorium, library, music and drama rooms.
- Logan West Regional Library
- Numerous office tenancies in Brisbane CBD – acoustic privacy and plant noise issue resolution.
- Hillbrook Anglican College – Auditorium, Chapel, Library
- QUT Kelvin Grove – Health II facilities
- Southbank Institute of TAFE – Major redevelopment
- QUT Gardens Point – teaching and office area acoustic rectifications
- Retail centres – internal fitouts, acoustic design.

### **Industrial Noise Assessments**

- Pioneer Levitt Road Quarry;
- Peterson Corporation Withcott Quarry;
- Astec Asphalt – Yatala Asphalt Plant;
- Gympie Gold – Eldorado Gold Mine and Lewis Decline, Gympie;
- Darwalla Milling – Mt Cotton Feedmill and Poultry Growing Sheds;

### **Noise, Air Quality and Light Studies**

- McDonalds Family Restaurants – Mt Gravatt, Windsor, Newmarket, Coorparoo, Casino, Port Douglas, Indooroopilly
- Supermarkets and Retail Developments– Newmarket, Gladstone, Townsville, Queen Street Central, Westfield Carindale, Capalaba Park
- Service Stations- Windsor, Aspley, Cannon Hill, Taigum, Yamanto, Loganlea

### **Air Quality Studies**

- Quarries – Levitt Road, Upper Coomera, Withcott, Gatton
- Concrete Batching Plants; Windsor, Caboolture, West End, West Burleigh
- Cattle Feedlots Coominya, Jondaryan, Acland, Wambo, Proston, Kilkivan
- Poultry Growing Narangba, Redland Bay, Mt Cotton, Waterford
- Sewage Treatment Plants Emerald, Bucasia Beach, Redcliffe
- Gas Turbine Power Stations Golden Plains, Mt Stuart

### **Transportation Air Pollutant Studies**

- Childcare Centres – Acacia Ridge, Kenmore, Tingalpa, Morningside, Wishart, Middle Park, Mango Hill, Mitchelton, Strathpine
- Drive through Restaurants – Palm Beach, Indooroopilly

### **Entertainment Noise Assessments**

- Fortitude Valley – Empire Hotel, The Beat, Warner Street, Jubilee Hotel

- Brisbane City – Fridays, City Rowers, Victory Hotel, Port Office Hotel, Gilhooleys, Britannia Inn
- Cheers Taverns – Aspley, Spring Hill, Sunnybank

#### **Environmental Impact Assessment**

- Newmarket Shopping Centre
- Gold Coast Convention and Exhibition Centre
- Cosco Holdings Tissue Paper Deinking Plant, Carole Park
- Minproc Sodium Cyanide Plant, Gladstone
- Withcott Quarry, Withcott
- Toll North – Moolabin Freight Dept

#### **Environmental Management Plans**

- Toll North Transport Depots/Workshops – Moolabin, Hamilton, Coopers Plains, Moorooka, Rockhampton, Townsville, Mackay
- Gold Coast Convention and Exhibition Centre
- Kennedy Metals, Archerfield
- Bryan Byrt Ford, Mansfield